

1 **UK-TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 UK-Type Examination Certificate Number: **BAS21UKEX0671X**

4 Product: **K5L and K7L Switchbox**

5 Manufacturer: **Topworx Incorporated**

6 Address: **3300 Fern Valley Road, Louisville, Kentucky, 40213 United States of America**

7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 SGS Baseefa, Approved Body number 1180, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.

The examination and test results are recorded in confidential Report No. **GB/SGS/ExTR23.0103/00**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0: 2018 EN 60079-11: 2012 EN 60079-31: 2014

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign “X” is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This UK-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

 See certificate schedule

SGS Baseefa Customer Reference No. **2191**

Project File No. **21/0357**


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R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number BAS21UKEX0671X**

15 **Description of Product**

The K7L Switchbox comprises an aluminium or stainless steel enclosure containing up to two sets of terminals blocks, up to four voltage free switches and up to four certified proximity sensors in any combination and interconnection facilities for remote mounted intrinsically safe equipment connections. The K5L Switchbox is of a similar construction to the K7L but is housed in a low profile enclosure.

Both K5L & K7L versions may include an optional mechanical visual indicator. External electrical connections are made using screw terminals via up to four tapped holes.

Models of the equipment with a 'D' in the model number are gas and dust certified. The installation of the external connections and plugging of the unused entries in these variants must be carried out using appropriately certified IP6X cable glands and blanking plugs.

Models of the equipment marked with a 'G' in the model number are only gas certified. The installation of the external connections and plugging of the unused entries in these variants must be carried out using appropriate cable glands and blanking plugs with a minimum ingress protection of at least IP20. These variants may also be optionally fitted with plug and socket connections fitted to the entries of the enclosure.

The following models of the K5L & K7L Switchbox are covered by this certificate: -

Dual Gas & Dust Certified 'D' Models

Models of the K5L & K7L Switchbox containing only voltage free (VF) contacts are designated as follows:

Model No. S-M-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb (-20°C \leq Ta \leq +70°C)
Ex tb IIIC T85°C Db (-20°C \leq Ta \leq +70°C)

VF Contact $U_i = 28\text{V}$ $I_i = 120\text{mA}$ $P_i = 1.3\text{W}$ $C_i = 0$ $L_i = 0$

Models of the K5L & K7L Switchbox containing only proximity sensors are designated as follows:

Model No. S-F-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb (-20°C \leq Ta \leq +70°C)
Ex tb IIIC T85°C Db (-20°C \leq Ta \leq +70°C)

Each Sensor $U_i = 15\text{V}$ $I_i = 50\text{mA}$ $P_i = 0.12\text{W}$ $C_i = 145\text{nF}$ $L_i = 340\mu\text{H}$

Model No. S-F-D

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb (-20°C \leq Ta \leq +70°C)
Ex tb IIIC T85°C Db (-20°C \leq Ta \leq +70°C)

Each Sensor $U_i = 15\text{V}$ $I_i = 50\text{mA}$ $P_i = 0.12\text{W}$ $C_i = 145\text{nF}$ $L_i = 340\mu\text{H}$

Model No. S-P-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T5 Gb (-25°C \leq Ta \leq +57°C)
Ex tb IIIC T100°C Db (-25°C \leq Ta \leq +57°C)
Ex ia IIC T6 Gb (-25°C \leq Ta \leq +42°C)
Ex tb IIIC T85°C Db (-25°C \leq Ta \leq +42°C)

Each Sensor $U_i = 16\text{V}$ $I_i = 52\text{mA}$ $P_i = 0.169\text{W}$ $C_i = 100\text{nF}$ $L_i = 550\mu\text{H}$

Model No. S-PH-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb $(-25^\circ\text{C} \leq T_a \leq +70^\circ\text{C})$
Ex tb IIIC T85°C Db $(-25^\circ\text{C} \leq T_a \leq +70^\circ\text{C})$
Each Sensor $U_i = 16\text{V}$ $I_i = 25\text{mA}$ $P_i = 0.034\text{W}$ $C_i = 100\text{nF}$ $L_i = 550\mu\text{H}$

Model No. S-T-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb $(-20^\circ\text{C} \leq T_a \leq +70^\circ\text{C})$
Ex tb IIIC T85°C Db $(-20^\circ\text{C} \leq T_a \leq +70^\circ\text{C})$
Each Sensor $U_i = 20\text{V}$ $I_i = 60\text{mA}$ $P_i = 0.08\text{W}$ $C_i = 250\text{nF}$ $L_i = 350\mu\text{H}$

The following versions of the K5L & K7L Switchbox operate at lower ambient temperatures. These versions are to be designated as Low Temperature K5L & K7L Switchboxes.

Models of the Low Temperature K5L & K7L Switchbox containing only voltage free (VF) contacts are designated as follows:

Model No. S-LM-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb $(-50^\circ\text{C} \leq T_a \leq +70^\circ\text{C})$
Ex tb IIIC T85°C Db $(-50^\circ\text{C} \leq T_a \leq +70^\circ\text{C})$
VF Contact $U_i = 28\text{V}$ $I_i = 120\text{mA}$ $P_i = 1.3\text{W}$ $C_i = 0$ $L_i = 0$

Models of the Low Temperature K5L & K7L Switchbox containing only proximity sensors are designated as follows:

Model No. S-LF-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb $(-40^\circ\text{C} \leq T_a \leq +60^\circ\text{C})$
Ex tb IIIC T85°C Db $(-40^\circ\text{C} \leq T_a \leq +60^\circ\text{C})$
Each Sensor $U_i = 15\text{V}$ $I_i = 50\text{mA}$ $P_i = 0.12\text{W}$ $C_i = 150\text{nF}$ $L_i = 150\mu\text{H}$

Model No. S-LP-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T5 Gb $(-40^\circ\text{C} \leq T_a \leq +60^\circ\text{C})$
Ex tb IIIC T100°C Db $(-40^\circ\text{C} \leq T_a \leq +60^\circ\text{C})$
Ex ia IIC T6 Gb $(-40^\circ\text{C} \leq T_a \leq +45^\circ\text{C})$
Ex tb IIIC T85°C Db $(-40^\circ\text{C} \leq T_a \leq +45^\circ\text{C})$
Each Sensor $U_i = 16\text{V}$ $I_i = 52\text{mA}$ $P_i = 0.169\text{W}$ $C_i = 120\text{nF}$ $L_i = 200\mu\text{H}$

Model No. S-LPH-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb $(-40^\circ\text{C} \leq T_a \leq +70^\circ\text{C})$
Ex tb IIIC T85°C Db $(-40^\circ\text{C} \leq T_a \leq +70^\circ\text{C})$
Each Sensor $U_i = 16\text{V}$ $I_i = 25\text{mA}$ $P_i = 0.034\text{W}$ $C_i = 120\text{nF}$ $L_i = 200\mu\text{H}$

Model No. S-LP-D-50-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T5 Gb $(-50^\circ\text{C} \leq T_a \leq +60^\circ\text{C})$
Ex tb IIIC T100°C Db $(-50^\circ\text{C} \leq T_a \leq +60^\circ\text{C})$
Ex ia IIC T6 Gb $(-50^\circ\text{C} \leq T_a \leq +45^\circ\text{C})$
Ex tb IIIC T85°C Db $(-50^\circ\text{C} \leq T_a \leq +45^\circ\text{C})$
Each Sensor $U_i = 16\text{V}$ $I_i = 52\text{mA}$ $P_i = 0.169\text{W}$ $C_i = 70\text{nF}$ $L_i = 150\mu\text{H}$

Model No. S-LPH-D-50-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb ($-50^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Ex tb IIIC T85°C Db ($-50^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 16\text{V}$ $I_i = 25\text{mA}$ $P_i = 0.034\text{W}$ $C_i = 70\text{nF}$ $L_i = 150\mu\text{H}$

Model No. S-LT-D-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 GD Ex ia IIC T6 Gb ($-40^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Ex tb IIIC T85°C Db ($-40^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 20\text{V}$ $I_i = 20\text{mA}$ $P_i = 0.20\text{W}$ $C_i = 150\text{nF}$ $L_i = 150\mu\text{H}$

Gas only Certified 'G' Models

Models of the K5L & K7L Switchbox containing only voltage free (VF) contacts are designated as follows:

Model No. S-M-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-20^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
VF Contact $U_i = 28\text{V}$ $I_i = 120\text{mA}$ $P_i = 1.3\text{W}$ $C_i = 0$ $L_i = 0$

Models of the K5L & K7L Switchbox containing only proximity sensors are designated as follows:

Model No. S-F-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-20^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 15\text{V}$ $I_i = 50\text{mA}$ $P_i = 0.12\text{W}$ $C_i = 145\text{nF}$ $L_i = 340\mu\text{H}$

Model No. S-F-G

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-20^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 15\text{V}$ $I_i = 50\text{mA}$ $P_i = 0.12\text{W}$ $C_i = 145\text{nF}$ $L_i = 340\mu\text{H}$

Model No. S-P-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T5 Gb ($-25^\circ\text{C} \leq T_a \leq +57^\circ\text{C}$)
Ex ia IIC T6 Gb ($-25^\circ\text{C} \leq T_a \leq +42^\circ\text{C}$)
Each Sensor $U_i = 16\text{V}$ $I_i = 52\text{mA}$ $P_i = 0.169\text{W}$ $C_i = 100\text{nF}$ $L_i = 550\mu\text{H}$

Model No. S-PH-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-25^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 16\text{V}$ $I_i = 25\text{mA}$ $P_i = 0.034\text{W}$ $C_i = 100\text{nF}$ $L_i = 550\mu\text{H}$

Model No. S-T-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-20^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 20\text{V}$ $I_i = 60\text{mA}$ $P_i = 0.08\text{W}$ $C_i = 250\text{nF}$ $L_i = 350\mu\text{H}$

The following versions of the K5L & K7L Switchbox operate at lower ambient temperatures. These versions are to be designated as Low Temperature K5L & K7L Switchboxes.

Models of the Low Temperature K5L & K7L Switchbox containing only voltage free (VF) contacts are designated as follows:

Model No. S-LM-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-50^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
VF Contact $U_i = 28\text{V}$ $I_i = 120\text{mA}$ $P_i = 1.3\text{W}$ $C_i = 0$ $L_i = 0$

Models of the Low Temperature K5L & K7L Switchbox containing only proximity sensors are designated as follows:

Model No. S-LF-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-40^\circ\text{C} \leq T_a \leq +60^\circ\text{C}$)
Each Sensor $U_i = 15\text{V}$ $I_i = 50\text{mA}$ $P_i = 0.12\text{W}$ $C_i = 150\text{nF}$ $L_i = 150\mu\text{H}$

Model No. S-LP-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T5 Gb ($-40^\circ\text{C} \leq T_a \leq +60^\circ\text{C}$)
Ex ia IIC T6 Gb ($-40^\circ\text{C} \leq T_a \leq +45^\circ\text{C}$)
Each Sensor $U_i = 16\text{V}$ $I_i = 52\text{mA}$ $P_i = 0.169\text{W}$ $C_i = 120\text{nF}$ $L_i = 200\mu\text{H}$

Model No. S-LPH-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-40^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 16\text{V}$ $I_i = 25\text{mA}$ $P_i = 0.034\text{W}$ $C_i = 120\text{nF}$ $L_i = 200\mu\text{H}$

Model No. S-LP-G-50-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T5 Gb ($-50^\circ\text{C} \leq T_a \leq +60^\circ\text{C}$)
Ex ia IIC T6 Gb ($-50^\circ\text{C} \leq T_a \leq +45^\circ\text{C}$)
Each Sensor $U_i = 16\text{V}$ $I_i = 52\text{mA}$ $P_i = 0.169\text{W}$ $C_i = 70\text{nF}$ $L_i = 150\mu\text{H}$

Model No. S-LPH-G-50-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-50^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 16\text{V}$ $I_i = 25\text{mA}$ $P_i = 0.034\text{W}$ $C_i = 70\text{nF}$ $L_i = 150\mu\text{H}$

Model No. S-LT-G-IEC

No indicator or indicator $\leq 20\text{cm}^2$ surface area

⊕ II 2 G Ex ia IIC T6 Gb ($-40^\circ\text{C} \leq T_a \leq +70^\circ\text{C}$)
Each Sensor $U_i = 20\text{V}$ $I_i = 20\text{mA}$ $P_i = 0.20\text{W}$ $C_i = 150\text{nF}$ $L_i = 150\mu\text{H}$

Where interconnection facilities for remote mounted intrinsically safe equipment connections are fitted, the input parameters for these terminals for all models are as follows:

$U_i = 30\text{V}$

Details of these terminal arrangements including interconnections are to be detailed on an internal label within the apparatus.

16 Report Number

GB/SGS/ExTR23.0103/00

17 Specific Conditions of Use

1. The cable glands used as entries to the enclosure must be suitably certified cable glands to the requirements of EN IEC 60079-0: 2018, including Annex A, with a minimum IP rating of IP6X in order to comply with the requirements of EN 60079-31: 2014.
2. Any unused entries must be fitted with a suitably certified blanking plug certified to the requirements of EN IEC 60079-0: 2018 with a minimum IP rating of IP6X in order to comply with the requirements of EN 60079-31: 2014.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	LVD type requirements
14	Overloading of equipment (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CERT-ES-09202-1	2 of 8	AC	2023-10-05	K5L/K7L Switchbox – Ex ia Certification Label – II 2 GD
CERT-ES-09202-1	3 of 8	AC	2023-10-05	K5L/K7L Switchbox – Ex ia Certification Label – II 2 G

For full drawing list refer to Baseefa16ATEX0138X.

These drawings are also common to Baseefa16ATEX0138X and IECEx BAS 16.0107X.